

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Manufacturing Engineering Technology Program
Revision Date: August 2025

I. CATALOG DESCRIPTION

Course Number: MFGT 2625
Course Title: Robotics & Industrial Automation
Prerequisite(s): **MFGT 1413 and MFGT 2680**
Catalog Description: Exploration of the general and technical aspects of industrial robots, providing a comprehensive overview of robotics systems and the subsystems that comprise them. Design of workstations, and all of the components that make up an automated system. Most methods of programming robotic systems will be covered.
Credit Hours: 1.5
Class Hours: 0
Lab Hours: 68
Total Contact Hours: 68

II. COURSE OBJECTIVES: *Course will:*

A. Introduce the principles of industrial robotics, related systems and applications.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

A. Student Learning Outcomes: *Student will be able to:*

1. Describe the characteristics of robots that make them an important part of industrial automation.
2. Describe the most common robotic work envelope configurations and match these work envelopes with specific robot applications.
3. Describe basic programming methods used with industrial robots.
4. List industrial applications where teach pendant programming and off-line programming are most commonly used.

B. General Education Learning Outcomes (GELOs)

1. GELO #3: Critical Thinking & Problem Solving
Outcome 2: Synthesize information to arrive at reasoned solutions to problems.

IV. CONTENT/TOPICAL OUTLINE (*course outline may provide more detailed information*)

- A. Fundamentals of robotics
- B. Programming the robot
- C. Industrial applications
- D. Electromechanical systems
- E. Sensors
- F. Interfacing and vision systems
- G. Maintaining robotic systems
- H. Robots in modern manufacturing

V. INSTRUCTIONAL MATERIALS

- A. Required Kit(s): *Choose One of the following*
1. Elegoo, Mega R3 Project Ultimate Starter Kit
OR
 2. Elegoo, Uno Project Super Starter Kit

3.  Dinwiddie, *Industrial Robotics - 1st edition*, ISBN-13: 9781133610991

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Methods of presentation typically include a combination of the following:
1. Lecture
 2. Small and large group discussion
 3. Video presentation
 4. Demonstrations
 5. Handouts
 6. Observations
 7. Assigned lab projects
 8. Field trips

VII. METHODS OF EVALUATION (*course outline will provide more detailed information*)

- A. Methods of evaluation, although determined by the individual instructor, traditionally includes a combination of the following:
1. Quizzes
 2. Tests
 3. Homework
 4. Lab grades

VIII. SPECIFIC COURSE REQUIREMENTS:

- A. Completion of all tests, projects, assignments, and notebook (if required).
B. Must earn a final grade of 60% (1.0) or higher.
C. Program shop safety rules will be followed. **Please see the course outline for any additional safety rules established by the instructor.**